

REMARKS

Claims 1-7 were pending in this application. According to the September 24, 2002 Office Action, the Examiner rejected claims 1-7 and objected to claim 7. Applicant has amended claim 1, 2, 4 and 7. Accordingly, claims 1-7 are under consideration. Applicant maintains that the amendments do not introduce any new matter.

Objection under 37 C.F.R. §1.75

The Examiner objected to claim 7 under 37 C.F.R. §1.75 as being a substantial duplicate of claim 4.

In response, Applicant has amended claim 7 to make it dependent from claim 5 and also have amended claim 4 to make it dependent from claim 3. Accordingly, claim 7 is no longer a duplicate of claim 4 and the Examiner is kindly requested to withdraw this rejection.

Rejection under 35 U.S.C. §112

The Examiner rejected claims 1-7 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

In response, Applicant has amended claims 1, 2, 4 and 7. Specifically claims 1 and 2 were amended to correct for the lack of antecedent basis of some terms while claims 4 and 7 were amended to make them dependent from claims 3 and 5, respectively thereby providing proper antecedent basis. Accordingly, the Examiner is kindly requested to withdraw this rejection.

Rejection under 35 U.S.C. §103(a)

The Examiner rejected claims 1-7 under 35 U.S.C. §103(a) as allegedly being unpatentable over Pescher et al. in view of Rohrer and Waldmann.

oxidizing agent [see column 3, line 31], treating with at least one flocculating agent (cationic

type, inorganic) [see column 4, line 8], treatment with at least one polyelectrolyte (in a concentration of 1 - 1000 ppm) and filtering in order to obtain a filtration cake and a filtrate.

Rohrer discloses a process wherein manure is mixed with coagulants, such as high molecular weight cationic compounds, and subsequently separated by sedimentation, filtration, flotation and or centrifugation.

Waldmann is related to a process comprising flocculation with cationic polyacrylamides or others, and subsequent separation of the solids by filtration or air flotation.

According to the Examiner, the difference between the independent claim of the present patent application and Pescher et al is reciting additional steps of introducing homogenized liquid manure into a tank, and eliminating liquid from a solid phase by flotation. Further, the Examiner indicated that from Rohrer it is known to flocculate liquid manure in a collection tank by thoroughly mixing coagulants with the manure. Furthermore, according to the Examiner, the step of eliminating liquid from a solid phase by flotation is known from Waldmann et al.

Nevertheless, the process of the present invention is not a mere combination of the process according to Pescher et al with additional known steps from Waldmann et al, since it avoids the treatments with inorganic oxidizing and flocculating agents before the treatment with a polyelectrolyte. Furthermore, the homogenization of the manure is a very important step, a step which is not disclosed in any of the cited prior art references. The variability and heterogeneity of liquid manure may be very high as the solid concentration of flushed manure varies greatly among production facilities that use flussing systems and within growing stages in the same unit. Thus, the liquid manures normally contain wide ranges of solids, nutrients, and oxygen-demanding compounds amenable for separation. Therefore, according to the present invention, the manure is agitated in order to achieve homogeneity, and then mixed together with the polyacrylamide. The manure being more homogeneous, less polymer is about 100 fold needed.

As the manure is more homogeneous, less polymer is needed, since normally the excess polymer would remain in the liquid fraction and increases its viscosity.

This high viscosity would negatively affect the mechanical, electrical and hydraulic systems of the equipment for performing the process of treating liquid manure.

In addition, as oxidizing and flocculating steps with inorganic substances are avoided, no excess oxidizing and flocculating substances remain in the final product. Thus, the quantity of final sludge will be reduced. This results in a higher value of the sludge and a more balanced effluent for crop nutrient needs. Further, the transport of solids and handling of the remaining liquids is made easier, with accompanying implications for improved management of nutrients in areas where swine and dairy cow production is concentrated. Such secondary benefits need to be duly considered when determining the economic costs of the technology.

Furthermore, there are additional differences between the process of the present invention and the process of Pescher et al. According to Pescher et al, 1-1000 ppm of polyelectrolyte may be used, while the present invention calls for the use of 80-140 ppm of a tertiary or quaternary polyacrylamide, which is the adjusted quantity needed in order to achieve the sufficient flocculation without having excess polyacrylamide in the liquid fraction, thus avoiding high viscosity as described above.

As indicated above, the present invention differs from the disclosures of the prior art references and also provides numerous advantages over these references either alone or in combination. Accordingly, none of the cited references either alone or in combination disclose or render the present invention obvious. Thus, the Examiner is kindly requested to withdraw this rejection.

In light of the foregoing, it is respectfully submitted that this application is now in condition to be allowed and the early issuance of a Notice of Allowance is respectfully solicited.

If there are any issues or amendments the Examiner wishes to discuss, the Examiner is encouraged to contact the undersigned.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on February 24, 2003:

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Name of applicant, assignee or
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Signature

February 24, 2003

Date of Signature

Respectfully submitted,

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APPENDIX B
Version with Markings to Show Changes Made
37 C.F.R. § 1.121(b)(iii) and (c)(ii)

CLAIMS:

1. (AMENDED) A process for treating liquid manure comprising:
homogenizing the liquid manure;
introducing the homogenized liquid manure into a tank at a relatively constant flow rate into which a tertiary or quaternary polymeric flocculent is introduced phase in an amount of between 80 ppm and 140 ppm and stirring for a time ranging from 5 to 15 minutes to bring about [the] an interchange of electrons in [the] electrostatic layers close to [the] potentials of [the] an electrostatic shearing plane, so that molecular bridges are formed and [the] colloids and solids in suspension are flocculated;
separating the solids;
eliminating the liquid entrained with the solid phase out by flotation and coalescence of colloidal particles; and
removing suspended solids from the liquid.
2. (AMENDED) The process as claimed in claim 1, wherein a bactericidal substance is added following the [formation and separation] removal of the [solid and] suspended solids from the liquid [phases].
4. (AMENDED) The process as claimed in claim [1] 3, wherein the cationic polymer is polyacrylamide
7. (AMENDED) The process as claimed in claim [1] 5, wherein the cationic polymer is polyacrylamide.